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Effects of Alcohol and Sexual Prejudice on Aggression Toward Sexual Minorities

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Abstract

Objective—This study was the first to test the moderating effect of acute alcohol intoxication on the relation between heterosexual men's sexual prejudice and perpetration of aggression toward gay men and lesbians.

Method—Participants were 320 heterosexual men aged 21–30 recruited from a large southeastern United States city. Participants completed a measure of prejudice toward sexual minorities and were randomly assigned to one of eight experimental groups within a 2 (Beverage: Alcohol, No-Alcohol Control) $\times$ 2 (Opponent Gender: Male, Female) $\times$ 2 (Opponent Sexual Orientation: Homosexual, Heterosexual) design. Following beverage consumption, participants were provoked via reception of electric shocks from a fictitious opponent. Participants' physical aggression was measured using a shock-based aggression task.

Results—The association between sexual prejudice and aggression toward the gay male opponent was stronger among intoxicated, relative to sober, participants. This pattern of association was not observed among participants who competed against the heterosexual male, heterosexual female, or lesbian opponent.

Conclusions—Findings provide the first experimental evidence that alcohol intoxication moderates sexually-prejudiced aggression toward gay men. These data offer a first step toward understanding how alcohol facilitates bias-motivated aggression. Such knowledge contributes to the empirical foundation needed to guide the development of interventions for alcohol-related aggression toward sexual minorities.

Keywords

Aggression; Alcohol; Sexual Prejudice; Homosexuality (Attitudes Toward); Homophobia

The Institute of Medicine (2011) report on LGBT health recognizes the study of violence based on a victim's sexual orientation as a priority research area. Indeed, research indicates that approximately 50% of sexual minority individuals experience bias-motivated aggression (Herek, 2009), and these victims suffer a greater severity of violence and experience greater detrimental personal and psychological effects than victims of other bias-motivated (Dunbar, 2006) and nonbiased assaults (Herek, Gillis, & Cogan, 1999). Despite a substantial literature

that identifies risk factors and mechanisms for aggression toward sexual minorities (for reviews, see Franklin, 2000; Parrott, 2008), there exist few published studies that specifically examine the link between acute alcohol intoxication and bias-motivated aggression toward sexual minorities or any other stigmatized group (Hull & Van Treuren, 1986; Parrott & Miller, 2009). This is a significant oversight in the current literature. It is well-established that acute alcohol consumption is a contributing cause of aggressive behavior generally (e.g., see Bushman & Cooper, 1990), and recent studies support the event-based link between alcohol use and aggression toward sexual minorities specifically (Dunbar, 2003; Parrott, Gallagher, Vincent, & Bakeman, 2010). However, there remains no *in vivo* empirical evidence to support this hypothesis. As such, the purpose of the present study was to examine whether acute alcohol intoxication moderates the effect of sexual prejudice on physical aggression toward gay men and lesbians.

Sexual Prejudice as a Determinant of Aggression Toward Sexual Minorities

Sexual prejudice incorporates “all negative attitudes based on sexual orientation, whether the target is homosexual, bisexual, or heterosexual” (Herek, 2000, p. 19). A wealth of research over the past several decades supports sexual prejudice as a prominent risk factor for aggression toward sexual minorities (for a review, see Parrott, 2008). Most notably, numerous survey-based studies have demonstrated a positive association between sexual prejudice and aggression toward gay men and lesbians (Franklin, 2000; Parrott & Peterson, 2008; Parrott, Peterson, & Bakeman, 2011; Patel, Long, McCammon, & Wuensch, 1995; Roderick, McCammon, Long, & Allred, 1998). Consistent with this research, experimental studies have demonstrated that male sexual prejudice is positively associated with increased aggression toward gay, relative to heterosexual, men (Bernat, Calhoun, Adams, & Zeichner, 2001; Parrott, 2009; Parrott & Zeichner, 2005). Importantly, these effects are only observed when heterosexual men are first exposed to expressions of male-male intimacy (Parrott & Zeichner, 2005), presumably because this situational factor elicits aggression-promoting internal states (Parrott, 2008). Indeed, studies show that sexually prejudiced men who are exposed to male-male, relative to male-female intimacy, experience higher levels of self-reported anger and negative affect (e.g., Bernat et al., 2001; Hudepohl, Parrott, & Zeichner, 2010; Mahaffey, Bryan, & Hutchison, 2005a; 2005b) and hostile cognition (Parrott, Zeichner, & Hoover, 2006).

To explain these findings, scholars posit that sexually-prejudiced aggression toward gay men functions to enforce traditional gender roles. Specifically, male homosexuality represents a threat to the traditional masculine identity. As such, one function of men’s sexually-prejudiced aggression toward gay men is to alleviate this threat by making clear distinctions between male and female gender roles (Bosson, Weaver, Caswell, & Burnaford, 2012; Kite & Whitley, 1998; Stotzer & Shih, 2012). In short, aggression toward gay men serves a social-expressive function that “defines group boundaries (with gay men on the outside and the self on the inside)” (Herek, 1986; pg. 573) and is reinforced further via the reaffirmation of one’s heterosexual masculine identity (Bosson et al., 2012; Franklin, 1998; Kimmel, 1997, 2010). This view is consistent with social identity theory (Tajfel & Turner, 1986), which stipulates that individuals derive self-esteem by denigrating or attacking out-groups.

In support of this view, studies indicate that adherence to traditional gender roles is strongly associated with sexual prejudice (e.g., Keiller, 2010; Kilianski, 2003; Whitley, 2001) and that sexual prejudice mediates the effect of gender role adherence and aggression toward gay men (Parrott et al., 2011; Vincent, Parrott, & Peterson, 2011). These effects are thought to be especially pronounced in young heterosexual men, because gender norms are more rigidly prescribed for, and adhered to by, men than women (Bosson, Taylor, & Prewitt-Freilino, 2006; Hort, Fagot, & Leinbach, 1990). Accordingly, research indicates that heterosexual men's attitudes toward gay men are generally more negative than their attitudes toward lesbians (Blashill & Powlishta, 2009, 2012; Herek, 1988; Kite, 1994; Wellman & McCoy, 2013). Despite this substantial literature on men's attitudes toward gay men and lesbians, there exists no research that directly and separately tests the effects of men's sexual prejudice on *aggression* toward gay men and lesbians. One aim of this study was to address this limitation.

The Effect of Alcohol Intoxication

Studies of intergroup bias indicate that alcohol increases the expression of prejudice, stereotyping, and discrimination (e.g., Bartholow, Dickter, & Sestir, 2006; Reeves & Nagoshi, 1993; Stepanova, Bartholow, Sauls, & Friedman, 2012). However, only two studies have examined the link between alcohol use and aggression toward sexual minorities. One event-based study showed that the odds of aggression toward a sexual minority increased significantly on a day when heterosexual men consumed alcohol (Parrott et al., 2010). Another survey-based investigation found that approximately 33% of hate crime perpetrators were intoxicated at the time of their offense (Dunbar, 2003). However, to date, no study has tested *in vivo* the effect of men's acute alcohol intoxication on the link between sexual prejudice and their perpetration aggression toward sexual minorities.

The effect of alcohol on aggression is often interpreted from the etiologic standpoint of alcohol myopia theory (AMT; Steele & Josephs, 1990). One model of AMT, the attention-allocation model, specifically posits that intoxicated individuals allocate their attention such that they perceive and process only the most salient cues of a situation (e.g., same-sex intimate behavior) to the exclusion of less salient inhibitory cues (e.g., legal consequences of aggression). In an extension of this theory, Giancola and colleagues (2010) proposed specific mechanisms that mediate the association between attention allocation and aggression, including negative affect and anger, hostile rumination, self-awareness, and empathy. In essence, at-risk individuals are believed to be more likely to experience negative internal states in response to provocation and less likely to exhibit self-awareness and empathy toward a potential victim. As a result, for these at-risk individuals, alcohol is hypothesized to focus attention onto these aggression-promoting internal states and shift attention away from aggression-inhibiting internal states. In contrast, low-risk individuals will still experience the myopic effects of alcohol; however, the content of their attentional focus is less likely to promote aggression.

AMT affords a parsimonious explanation for the hypothesized effect of alcohol on aggression toward sexual minorities. Specifically, intoxicated, sexually prejudiced men who are exposed to sexual violations of the male gender role should be particularly likely to

myopically focus attention onto their internal experience of anger, negative affect, and hostile cognitions. Alcohol intoxication should also shift attention away from pre-existing self-relevant thoughts about appropriate social behavior and empathetic thoughts and feelings. The collective effect of this alcohol myopia will be to facilitate aggression toward gay male, relative to heterosexual male, targets. In contrast, exposure to sexual violations of the female gender role should be less likely to elicit negative internal states; in turn, alcohol is not expected to facilitate aggression toward lesbian, relative to heterosexual female, targets.

The Present Study

Informed by the integration of these literatures, the current study sought to test the moderating effect of alcohol on the relation between heterosexual men's sexual prejudice and perpetration of aggression toward gay men and lesbians. It was hypothesized that (1) the relation between sexual prejudice and aggression toward gay men would be stronger among intoxicated, relative to sober, men; and (2) this effect was not expected for aggression toward lesbian or heterosexual individuals. Laboratory-based studies (e.g., Parrott & Zeichner, 2005) have firmly established the effect of sexual prejudice on aggression toward male sexual minority targets under highly provoking conditions (operationalized as participants' receipt of high intensity shocks from a fictitious gay opponent). Thus, we predicted that (3) hypothesized effects for aggression toward gay men would be more pronounced under high, relative to low, provocation.

Method

Participants and Recruitment

Male social drinkers between the ages of 21 and 30 were recruited from Atlanta, GA through internet advertisements and local newspapers for a study on "Alcohol and Behavior." Young men were selected because (1) this demographic is disproportionately more aggressive toward sexual minorities (NCAVP, 2007), and (2) most laboratory research has demonstrated that the effect size of alcohol on direct physical aggression is larger in men than in women (e.g., Giancola et al., 2009). Thus, because this study sought to test hypotheses amongst persons deemed most susceptible to the aggression-facilitating effects of alcohol toward sexual minorities, only men were examined.

Respondents were initially screened by telephone. Participants were informed that they would be required to complete a questionnaire battery (Session 1) and participate in a separate experimental session (Session 2). To mask the true aims of the study, additional questionnaires not pertinent to the aims of the present study were also administered during Session 1. Social drinking was defined as consuming at least three drinks per occasion a minimum of two times per month. Participants were also screened for alcohol dependence using the Brief Michigan Alcoholism Screening Test (Pokorny, Miller, & Kaplan, 1972). Research indicates that a cutoff score of six or above maximizes identification of alcohol dependent persons with minimal likelihood of false positives (Chan, Pristach, & Welte, 1994; Pokorny et al., 1972). Thus, any person scoring at or above this cutoff was excluded from participation. Those who reported past or present drug or alcohol-related problems,

acute psychiatric symptomatology as defined by a score above 65 on the Global Severity Index of the Symptom Checklist-90-Revised (Derogotis, 1983), serious head injuries, or a condition in which alcohol is medically contraindicated were also excluded. Within one week of completing the telephone screening interview, ineligible participants were contacted by phone and informed that they would not be eligible to participate. Eligible participants were contacted by phone and scheduled for a Session 1 appointment. Participants were told to refrain from drinking alcohol or using recreational drugs 24 hours prior to testing and to refrain from eating four hours prior to testing. Two eligible participants did not complete Session 1 because they arrived to the laboratory with a positive breath alcohol concentration (BrAC). These participants were unable to reschedule their appointments.

These eligibility criteria were reassessed upon participants' presentation to Session 1. In addition, a self-identified heterosexual sexual orientation was confirmed via self-report and the Kinsey Heterosexual-Homosexual Rating Scale (Kinsey, Pomeroy, & Martin, 1948). As recommended by Savin-Williams (2006), reliable assessment of sexual orientation is best achieved when: (a) self-identification, behavioral experiences, and sexual arousal are congruent, and (b) the highest priority is given to indices of sexual arousal. Indeed, self-identification and behavioral experiences are more susceptible to social context effects, self-report biases, and variable meanings. Thus, among self-identified heterosexual participants, a heterosexual orientation was confirmed by endorsement of exclusive sexual arousal to females and sexual experiences that occurred predominately with women. Using these criteria, 346 participants were deemed eligible and presented to Session 2. No participant was deemed ineligible due to intoxication upon arrival to Session 2.

The sample consisted of 104 Caucasians, 202 African-Americans, 24 multiracial individuals, and 16 individuals from other racial backgrounds. Participants reported means for age of 24.3 years ($SD = 2.7$), education of 14.7 years ($SD = 2.4$), and yearly family income of \$26,000 ($SD = \$20,278$). Eight-seven percent of the participants were never married. All participants were compensated \$10 per hour of participation. This study was approved by university's institutional review board.

Experimental Design

Participants were randomly assigned to one of eight experimental groups within a 2 (Beverage: Alcohol, No-Alcohol Control) $\times$ 2 (Opponent Gender: Male, Female) $\times$ 2 (Opponent Sexual Orientation: Homosexual, Heterosexual) design. Participants were also exposed to both levels of provocation (low, high) during the laboratory aggression paradigm (see below), thus making it a repeated measure. Although many laboratory-based studies of the alcohol-aggression relation have employed placebo groups (i.e., receive no alcohol, told alcohol), only one study has shown that participants in a placebo group displayed higher levels of aggression than participants in a no-alcohol control group (Lang, Goeckner, Adesso, & Marlatt, 1975). Moreover, while placebo groups are sometimes more likely to produce compensatory responses that could reduce aggression relative to no alcohol control groups (Bushman & Cooper, 1990), meta-analytic studies generally demonstrate that placebo and no alcohol control groups do not significantly differ in aggression (Bushman, 1993; Hull & Bond, 1986; Steele & Southwick, 1985). For these reasons, as well as the fact

that placebo beverages are typically not consumed in “real world” situations, a no-alcohol control group was deemed preferable.

Questionnaire Battery

Demographic form—This measure obtained information such as age, self-identified sexual orientation, race, relationship status, years of education, and yearly family income.

Kinsey Heterosexual-Homosexual Rating Scale (Kinsey et al., 1948)—A modified version of this two-item instrument was used to assess prior sexual arousal and experiences. A 7-point scale asks participants to rate separately their sexual arousal and behavioral experiences from “exclusively heterosexual” to “exclusively homosexual.” Despite its limitations (Sell, 1997), it is one of more widely used measures of sexual orientation and standard in the field.

Attitudes Toward Gay Men and Lesbians Scale (Herek, 1988)—Sexual prejudice was assessed with this 20-item Likert-type scale that separately measures attitudes towards gay men (10 items) and lesbians (10 items). On each subscale, scores range from 1 (extremely positive attitudes) to 9 (extremely negative attitudes). Sample items include “I think male homosexuals are disgusting” and “Female homosexuality is a threat to many of our basic social institutions.” Herek (1994) reports strong internal consistency for non-student samples ($\alpha > .80$) and convergent validity for these scales, which was consistent with the present study ($\alpha = .86-.90$).

Beverage Administration

Participants in the alcohol beverage condition were administered a dose of .99g/kg of 95% alcohol mixed at a 1:5 ratio with Tropicana orange juice. This dose, which ranges from 4-7 standard drinks for a 130-220 lb. male, has been used in past studies of alcohol-related aggression and reliably produces breath alcohol levels between .08%-.12%. Participants in the no-alcohol control beverage condition received an isovolemic beverage consisting of only orange juice. All participants were allotted 20 minutes to consume their beverage.

Aggression Paradigm

A modified version of the Taylor Aggression Paradigm (TAP; Taylor, 1967) was used to measure direct physical aggression. The hardware for the task was developed by Coulbourn Instruments (Allentown, PA) and the computer software was developed by Vibranz Creative Group (Lexington, KY). In the TAP, the participant is seated at a table equipped with a monitor and a keyboard. Red adhesive labels marked “1” through “10” are attached to the number keys across the top of the keyboard. The keyboard and monitor are connected to a computer located in an adjacent control room out of the participant’s view. The task is presented as a reaction time competition, in which the participant competes against a fictitious participant who is ostensibly seated in an adjacent room. As a part of the competition, electrical shocks are received from and ostensibly administered to the fictitious opponent. Physical aggression was defined as the summation of standardized scores for the average intensity and duration of shocks selected. This was done because previous research has demonstrated that shock intensity and shock duration are highly correlated and part of a

more general construct of direct, physical aggression (Carlson, Marcus-Newhall, & Miller, 1989). The TAP has been shown to be a safe and valid measure of aggressive behavior (e.g., Anderson & Bushman, 1997; Parrott, Miller, & Hudepohl, in press).

Opponent Gender and Sexual Orientation Manipulations

Upon the participant reaching a BrAC of .075%, the lab's ostensible closed circuit television system, which is purportedly used for participants to see and hear one another during the experimental task, was activated. In actuality, participants viewed a 6-minute scripted video that depicted their opponent sitting in a room reading a magazine. After approximately one minute, participants were told that there was a technical difficulty, wherein the opponent was not able to see or hear the participant. At this time, they were also told over an intercom that there would be a brief delay prior to completing the reaction time task because their opponent needed to speak with his/her friend about a ride home. This 2-minute segment involved the confederate's boyfriend or girlfriend entering the room, discussion of transportation home and plans for a date that night, and the opponent saying "I love you" and giving his boyfriend/girlfriend a kiss on the lips. The experimenter controlled the video from a computer located in the control room. In this way, the opponent's gender and sexual orientation (as evidenced by intimate behavior with a same- or opposite-sex intimate partner) was manipulated.

Procedure

Participants came to the laboratory on two separate days. During Session 1, informed consent was obtained and all participants completed a questionnaire battery. For Session 2, which occurred no later than two weeks after Session 1, participants were met in a room separate from the aggression laboratory and informed consent was obtained. In order to disguise the task as a measure of aggression, participants were given a fictitious cover story. They were informed that the purpose of the study was to examine the relation between alcohol and reaction time under competitive conditions. As such, they were informed that they would consume an alcoholic or non-alcoholic beverage prior to engaging in a competitive reaction time task.

Participants were escorted to the testing room, at which time the experimenter identified an adjacent room where the "opponent" was ostensibly seated. Participants then received instructions regarding the reaction time competition. They were told that shortly after the words "Get Ready" appeared on the screen, the words "Press the Spacebar" would appear at which time they had to press and hold down the spacebar. Following this, the words "Release the Spacebar" appeared at which time they had to lift their fingers off of the spacebar as quickly as possible. A "win" was signaled by the words "*You Won. You Get to Give a Shock*" and a "loss" was signaled by the words "*You Lost. You Get a Shock.*" A winning trial allowed participants to deliver a shock to their opponent and a losing trial resulted in receiving a shock from their opponent. Participants were told that they had a choice of 10 different shock intensities to administer at the end of each winning trial for a duration of their choosing. Although participants could not elect to not shock their opponent, they were told that shock button "#1" would deliver a low intensity shock that was "very mild" and "definitely not painful."

Next, participants were administered an alcoholic or non-alcoholic beverage and allotted 20 minutes to consume their beverage. Participants' pain thresholds were then assessed to determine the intensity parameters for the shocks they would receive. This was accomplished via the administration of short duration shocks (one second) that increased in intensity in a stepwise manner from the lowest available shock setting, which was imperceptible, until the shocks reached a subjectively-reported "painful" level. All shocks were administered through two finger electrodes attached to the index and middle fingers of the nondominant hand using Velcro straps. Participants were instructed to inform the experimenter when the shocks were "first detectable" and then when they reached a "painful" level. The threshold determination procedure was conducted while participants were seated in the testing room and the experimenter was in the adjacent control room. They communicated through an intercom. Immediately before assessing their pain thresholds, participants were informed that their opponent would undergo the threshold assessment first and that they would be able to hear their opponent's responses to the procedure over an intercom. In actuality, a confederate answered the experimenter's questions regarding the testing of his or her pain thresholds in accordance with a list of predetermined responses. After the pain thresholds were determined and participants reached a BrAC of .075%, the opponent gender and sexual orientation manipulations were conducted. Immediately thereafter, participants BrACs were assessed every five minutes until they reached .08%. At that time, participants were provided with a written explanation of the aggression task and began the reaction time competition. Immediately prior to the competition task, all participants were informed again that they could stop the experiment at any time without penalty.

The entire procedure consisted of two successive blocks of trials. The experimenter, other electronic equipment, and the computer that controlled the task were located in an adjacent control room out of the participants' view. All shocks delivered to participants were one second in duration and ranged from 55% (a "1") to 100% (a "10") of the highest tolerated shock intensity. During the first block, participants received shock intensities of "1" and "2" after they lost a trial. During the next block, they received shock intensities of "9" and "10" after they lost a trial. Each block consisted of 16 trials (8 wins and 8 losses). There were two "transition trials" between the blocks. Participants lost both of the trials and received respective shock intensities of "5" and "6." Thus, there were a total of 34 trials. This sequence of trials was intended to give the appearance of an increasingly provoking aggressive interaction. Following each trial, a specially designed "volt meter" and the illumination of one of the 10 "shock lights" [ranging from 1 (low) to 10 (high)] on the computer screen signaled to the participant the shock that he or the opponent selected. In actuality, reaction time was not measured and the competitive task was used to lead participants to believe that they were engaging in an adversarial interaction with another individual. A randomly generated win/loss sequence was predetermined and incorporated into the computer program that executed the task. All participants received the same sequence. A computer controlled the initiation of trials, administration of shocks to participants, and recording of their responses.

Upon completion of the aggression task, BrACs were measured for all participants. They were also asked a variety of questions to assess the credibility of the deception (see below).

Participants were then fully debriefed, provided verbal and written descriptions of the study's aims, and compensated. All individuals who received alcohol were required to remain in the laboratory until their BrAC fell to .03%, at which point they were escorted to pre-arranged transportation (e.g., public transportation, friend/family member) by laboratory staff.

Results

Manipulation Checks

Aggression task checks—Prior to debriefing, participants were interviewed to confirm their belief that they were competing against another individual on a “reaction time” task and that this task was not a measure of aggression. First, participants were asked whether or not they thought the task was a good measure of reaction time. Second, they were asked to provide an “impression” of their opponent and comment on whether they thought their opponent was “reasonable.” The main criteria for exclusion were participants’ beliefs that the “opponent” was fictitious and that the task was a measure of aggression. Of the 346 participants, 17 (5%) indicated that the task was not a measure of reaction time and/or that their opponent was “bogus.” In addition, 9 (3.6%) did not complete the experimental protocol for some reason (e.g., did not reach target BrAC, equipment malfunction). These participants were not included in data analyses and resulted in a final sample of 320, in which the number of participants in each of our eight experimental groups ranged from 36 to 42. Next, participants were asked to provide an impression of the opponent’s sexual orientation. All participants correctly identified the intended sexual orientation of the confederate. Finally, none of the participants indicated becoming aware of the study’s aims following completion of their questionnaires in Session 1.

BrAC Levels—A repeated measures ANOVA indicated that participants’ BrAC in the alcohol group was significantly higher post-TAP ($M = .115\%$, $SD = .017$) than pre-TAP ($M = .099\%$, $SD = .015$), $F(1, 157) = 174.21$, $p < .001$. This finding indicated that participants were on the ascending limb of the BrAC curve.

Regression Analyses

Hypotheses were tested by conducting a series of hierarchical linear regression analyses. Given that sexual prejudice is a continuous variable, regression analyses were indicated. Raw scores were first converted into a z -score (Aiken & West, 1991). Beverage and opponent groups were coded as follows: no-alcohol control = 0, alcohol = 1; female = 0, male = 1; heterosexual = 0, homosexual = 1. Interaction terms were calculated by obtaining the cross-products of pertinent first-order variables. Notably, sexual prejudice toward gay men was included in interaction terms and analyses for participants who competed against a male opponent, whereas sexual prejudice toward lesbians was included in interaction terms and analyses for participants who competed against a female opponent.

We computed separate hierarchical regression models for the TAP dependent measure at both levels of provocation. This permitted the explication of four-way interactions within each level of provocation; indeed, five-way interactions are extraordinarily difficult to plot.

For each hierarchical analysis, main effects of sexual prejudice, beverage group, opponent gender, and opponent sexual orientation were entered first (Step 1) and their interactions were entered second (Step 2). This resulted in a full model comprising fifteen variables. To explicate significant interaction terms, regression coefficients for simple effects were examined to determine whether they were significantly different from zero (Aiken & West, 1991; Cohen, Cohen, West, & Aiken, 2003). An *a priori* power analysis (G-Power; Erdfelder, Faul, & Buchner, 1996) conservatively estimated a small effect size ($f^2 = .06$) and determined that 327 participants would provide adequate power to detect the hypothesized effects. A post-hoc analysis indicated that the sample size of 320 achieved excellent power to detect the hypothesized effects ($1 - \beta = .99$).

Effects of Alcohol and Sexual Prejudice on Antigay Aggression Following Low Provocation

In Step 1, the regression model was significant, $F(4, 315) = 3.54, p = .008, R^2 = .043$. The main effect for beverage was significant ($\beta = .16, p < .005$). This finding indicated that participants who consumed alcohol were more aggressive than participants who consumed a No-Alcohol control beverage following low provocation. In Step 2, the regression model was not significant, $F(15, 304) = 1.59, p = .075; R^2 = .073, R^2 = .03, p = .552$. There were no significant 2-way, 3-way, or 4-way interactions. To ensure that higher order effects did not mask significant lower-order interactions, these data were re-analyzed using a four-step entry approach, wherein main effects, 2-way interactions, 3-way interactions, and the 4-way interaction were entered in a stepwise fashion. Again, no significant 2-way, 3-way, or 4-way interactions were detected.

Effects of Alcohol and Sexual Prejudice on Antigay Aggression Following High Provocation

In Step 1, the regression model was significant, $F(4, 315) = 7.13, p < .001, R^2 = .083$. The main effect for sexual prejudice was significant ($\beta = .27, p < .001$). This finding indicated that higher levels of prejudice toward sexual minorities were associated with higher levels of physical aggression following high provocation. In Step 2, the regression model was also significant, $F(15, 304) = 4.78, p < .001; R^2 = .191, R^2 = .11, p < .001$. There were numerous 2-way and 3-way interactions which were qualified by a significant Beverage $\times$ Sexual Prejudice $\times$ Opponent Gender $\times$ Opponent Sexual Orientation interaction ($b = 1.27, \beta = .31, p < .05$).

Please see Figures 1 (male opponents) and 2 (female opponents) for a graphical depiction of this interaction. It was predicted that the relation between sexual prejudice and aggression toward gay men would be stronger among intoxicated, relative to sober, men (Hypothesis 1) and that this effect would not be observed for lesbian or heterosexual targets (Hypothesis 2). Consistent with Hypothesis 1, explication of this interaction indicated that the relation between sexual prejudice and aggression toward a gay male was significantly stronger among participants who consumed alcohol ($\beta = .75, p < .001$) than participants who consumed a no-alcohol control beverage ($\beta = .27, p = .044$). Consistent with Hypothesis 2, this pattern of association was not observed among participants who competed against the heterosexual male (alcohol: $\beta = .04, p = .817$; no-alcohol control: $\beta = .49, p = .003$) or

against the heterosexual female (alcohol: $\beta = -.13$, $p = .381$; no-alcohol control: $\beta = .41$, $p = .015$) or lesbian female (alcohol: $\beta = .03$, $p = .816$; no-alcohol control: $\beta = .44$, $p = .003$). Collectively, these data support Hypothesis 3, in that the moderating effect of alcohol on the relation between sexual prejudice on aggression toward a gay male was observed only under highly provoking conditions.

Discussion

The central aim of this study was to test the hypothesis that alcohol intoxication moderates the association between sexual prejudice and aggression toward gay men, in that this relation is stronger among intoxicated, relative to sober, men. Alcohol intoxication was not expected to moderate the association between sexual prejudice and aggression toward lesbian or heterosexual individuals. Results supported this hypothesis, yet some unexpected findings emerged as well. As predicted by Hypothesis 1, sexual prejudice was significantly and positively associated with aggression toward gay men; however, this effect was significantly stronger among intoxicated relative to sober heterosexual men. Consistent with prior literature, a moderate effect ($\beta = .27$) of sexual prejudice on aggression toward gay men was observed among sober men under conditions of high, but not low, provocation (Parrott, 2009; Parrott & Zeichner, 2005). And, consistent with Hypothesis 3, alcohol intoxication resulted in a larger effect of sexual prejudice on aggression toward gay men following high provocation. These findings are important because they provide the first experimental evidence that alcohol intoxication facilitates sexually-prejudiced aggression toward gay men.

These data are consistent with the attention allocation model. Specifically, studies indicate that following exposure to a sexual violation of the male gender role, sexual prejudice facilitates aggression toward male sexual minorities via the elicitation of anger and hostile cognitive biases (Bernat et al., 2001; Parrott et al., 2006). Consistent with these findings, among sober men, sexual prejudice was positively associated with aggression toward gay men. Importantly, the present data are the first to show that alcohol intoxication moderates this effect. These data are in line with the view that alcohol myopically focuses attention toward gender-relevant cues and associated hostile cognitions more so among men high, relative to low, in sexual prejudice. This attentional shift is believed to facilitate differential aggressive responding even further. Also, as predicted by Hypothesis 2, alcohol intoxication did not result in a strengthened association between sexual prejudice and aggression toward the heterosexual male opponent or the female opponent (regardless of her sexual orientation). This is important to note, as the absence of moderation effects of alcohol intoxication within all three of these experimental groups has similar implications for the cues upon which men were (and were not) focused. Specifically, intoxicated, heterosexual men who were exposed to heterosexual intimate behavior and female-female intimate behavior were highly provoked and likely experienced negative affect and/or hostile thoughts; however, these data suggest that alcohol did not shift attention toward these internal cues differentially as function of one's level of sexual prejudice. Collectively, these findings indicate that alcohol intoxication facilitates sexually-prejudiced aggression toward gay men, but not toward lesbians or heterosexual males or females.

The present study did yield an unexpected, and somewhat perplexing, pattern of results as well. Within the context of the Beverage $\times$ Sexual Prejudice $\times$ Opponent Gender $\times$ Opponent Sexual Orientation interaction, significant and moderately-sized positive correlations were detected between *sober* men's sexual prejudice and aggression toward the heterosexual male, heterosexual female, and lesbian female opponent. This finding is inconsistent with numerous studies in this area, which have shown that sexual prejudice predicts aggression toward gay, but not heterosexual, targets (e.g., Bernat et al., 2001; Parrott, 2009; Parrott & Zeichner, 2005). Nevertheless, it suggests that, in this particular sample, sexual prejudice was associated with a general tendency among sober men to display physical aggression. What is critical, however, is that acute alcohol intoxication strengthened this effect only for men who reported high levels of sexual prejudice and competed against the gay male opponent.

Limitations

Several limitations of the present study merit attention. First, we did not experimentally assess attention allocation and, as a result, are not certain that men were allocating their attention as theorized. Until future studies more directly test AMT by examining whether alcohol shifts attention toward men's internal experience of anger, negative affect, and hostile cognitions and/or away from pre-existing self-relevant thoughts about appropriate social behavior and empathetic thoughts and feelings, conclusions based on this theoretical mechanism should be considered tentative. Second, the sample excluded women for the primary reason that prevalence data indicate that men are the most typical perpetrators of aggression toward sexual minorities. Nonetheless, women do express prejudice toward sexual minorities in various ways, including aggression. The lack of research on female aggression toward sexual minorities is a significant weakness in this literature and requires attention. Third, regression models accounted for only 19% of the variance in aggression. Thus, other determinants (e.g., gender role adherence, peer dynamics) that have a significant impact on aggression toward sexual minorities should be assessed in future work (e.g., see Parrott, 2008). Fourth, numerous forms of aggression commonly experienced by sexual minorities (e.g., verbal aggression, property crimes) were not assessed. Laboratory- and survey-based research that assesses multiple forms of aggression toward sexual minorities may offer additional insights into alcohol's effects on aggression and discrimination toward sexual minorities. Finally, comparison groups that include other male sexual minorities (e.g., bisexual) or gender-variant minorities (e.g., transgender) were not included in the present study. Such research is also clearly warranted.

Research Implications

Collectively, these data suggest that sexually prejudiced men perceive highly salient instigatory – and perhaps threatening – cues specifically in gay men. This heightened perception of threat is magnified by alcohol intoxication, thereby potentiating the bias-motivated aggressive response. This interpretation is consistent with the well-accepted view that male homosexuality represents a threat to heterosexual men's masculine identities (e.g., Herek, 1986; Kite & Whitley, 1996, 1998). Specifically, dominant theory on sexual prejudice suggests that the function of men's sexually prejudiced aggression toward gay men is to alleviate this threat by making clear distinctions between male and female gender

roles (Bosson et al., 2012; Kite & Whitley, 1998; Stotzer & Shih, 2012). In keeping with this theory, results add to existing literature by showing that alcohol intoxication exacerbates this process. However, it is also clear that continued research is necessary to evaluate generalizability of this function to female perpetrators as well as to other identities of male sexual minority victims.

Clinical and Policy Implications

Unlike extant literature on non-biased alcohol-related aggression, the empirical foundation upon which to guide the development of interventions for alcohol-related antigay aggression does not exist. The present research provides impetus for future research to elucidate this complex and understudied relationship. In doing so, an evidence base may be established from which culturally informed social and individual-level prevention and intervention efforts may be developed. That stated, AMT-based interventions advanced for alcohol-related aggression (Giancola et al., 2010) may be similarly adapted to alcohol-related aggression toward sexual minorities. Broadly, these techniques involve both community- and societal-level campaigns (e.g., public service announcements that highlight inhibitory cues) as well as individualized methods to redirect the inebriate's attention toward non-aggressive cues (e.g., a non-violence wristband). In addition, extant literature also suggests that the reduction of preexisting risk factors, such as sexual prejudice, may negate the biased effect of alcohol on aggression toward gay men (Parrott & Miller, 2009). Several interventions designed to reduce sexual prejudice, most based on intergroup contact theory, have received empirical support or appear promising (for a review, see Vincent, Parrott, & Peterson, in press).

The development of effective interventions has the potential for a positive, downstream ripple effect on sexual minority health. Meyer's (2003) minority stress model posits that sexual minorities experience elevated rates of psychological stress as a result of an actual experience of violence (distal factors) and/or their subjective perception of or reaction to violence (proximal factors). An example of a proximal factor is felt stigma (Herek & McLemore, 2013), or the relatively constant expectation that one will be discriminated against or victimized and the heightened psychological vigilance required to monitor for such threats. Importantly, sexual minorities can experience felt stigma – and hence heightened stress – in the absence of direct victimization. Thus, social- and individual-level intervention for perpetrators can also result in changes in sexual minorities' experience or expectation of violence and, by extension, their mental and physical health.

Conclusion

The present study provides the first laboratory-based examination of alcohol-related aggression toward sexual minorities. Findings indicate that alcohol intoxication moderates the relation between sexual prejudice and aggression toward a gay male, in that this relation is stronger among participants who consume alcohol than participants who consume a no-alcohol control beverage. These effects were not observed among participants who competed against a lesbian or heterosexual opponent. Results contribute to theoretical explanations of the function of male-perpetrated aggression toward gay men and add to the empirical foundation to inform intervention programming and public policy.

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Figure 1. Effect of sexual prejudice and alcohol intoxication on aggression toward a gay male (top panel) and a heterosexual male (bottom panel).

Figure 2. Effect of sexual prejudice and alcohol intoxication on aggression toward a lesbian female (top panel) and a heterosexual female (bottom panel).